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AT THE INTERSECTION OF GEOGRAPHY, HISTORY, AND ARCHAEOLOGY: HOW AND WHEN THE STRONGHOLD IN ORTEL KSIĄŻĘCY (BIAŁA PODLASKA DISTRICT) 'DISSOLVED'

ABSTRACT

Until recently, the term 'early-medieval stronghold in Ortel Książęcy' referred to a small fortified site whose earthworks are clearly visible on the surface. LiDAR data have shown, however, that this feature constitutes only a minor part of a much larger fortification system, comprising several lines of ramparts and moats that are no longer visible in the present-day terrain. The analysis presented in this article aims to establish the date and cause of the disappearance of the ring ramparts from the ar-

chaeologically observable surface. A comparison of archival plans and maps indicates that the now-invisible ring ramparts were destroyed as a result of water erosion caused by changes in the local hydrographic network. These changes were brought about by the migration of the Zielawa River, probably following a major flood. Based on the dates of map production, it was possible to determine that this event occurred between 1779 and the end of the 18th century.

Keywords: Podlachia, Polish Archaeological Record, aerial photography, LiDAR mapping, strongholds, early-medieval period, modern times

Introduction

The causes of the destruction of fortifications at early medieval defensive sites are rarely treated as a primary subject of scholarly inquiry. In most cases, discussion of these processes is limited to brief assessments of preservation and to general indications of anthropogenic or natural factors, usually addressed only marginally within studies focused on more prominent research questions. More detailed consideration tends to occur only where destruction or devastation can be linked to specific, identifiable events, whether intentional or accidental. Such cases are known from many regions of Poland, including southern Podlachia, where one of the strongholds forms the subject of the present study.

The best-known site in the region, destroyed as a result of human activity, is the stronghold at Krzesk-Królowa Niwa, Siedlce district.¹ Its southern part was, indeed, 'spectacularly' and almost completely devastated

by the construction and subsequent expansion of Road E30. Another such case is the stronghold at Huszlew, Łosice district, whose fortifications were entirely levelled by the landowner using heavy machinery.² Reports of the destruction of ramparts as a result of agricultural activity are also common, as was the case with the inner line of fortifications at Grodzisk, Węgrów district.³ Destruction resulting from natural factors is discussed even more rarely and in less detail, which may be due to the lack of environmental studies aimed at reconstructing palaeoenvironmental conditions. With regard to defensive sites in the same region, this category of factors has been mentioned in the case of Drohiczyn, where the stronghold, representing the remains of an important centre of power, was almost completely destroyed by the Bug River.⁴ In effect, this topic, regarded as being of little value to scholarly discourse, has lain entirely at the margins of scholarship (and rightly so!). There are,

¹ Kalaga 1989.

² Dulinicz, Żukowski 2005.

³ Wróblewski 1990.

⁴ Musianowicz 1980.

however, interesting exceptions to this rule. One such case history can be reconstructed, using cartographic sources, for the stronghold at Ortel Książęcy, Biała Podlaska district.

Archaeological data

The early-medieval settlement complex mentioned above, comprising a stronghold as well as several dozen settlements and settlement traces, is located within the administrative borders of the villages of Dokudów Pierwszy (hamlets: Ostrów and Siedlisko), Ortel Królewski Pierwszy, Ortel Królewski Drugi, and Ortel Książęcy Pierwszy (Fig. 1). Sites forming the settlement background to the fortification were recorded on both opposing edges of the floodplain terrace of the extensive Zielawa River basin at this location. Geological research has shown that, extending over a length of more than 3.5 km and reaching a width of as much as 1 km, it is a geological relic of a Pleistocene tunnel-valley lake that existed during the Mazovian Interglacial, separating the phases of the South Polish and Middle Polish glaciations.⁵ At present, the river flows through a regulated channel constructed along the south-eastern edge of the basin, following the line of its natural course.⁶ Parallel to it, along the opposite, north-western margin of the upland, a drainage ditch was excavated to carry the waters of the Żarnica River, which in its source area is connected to the Wieprz-Krzna Canal and flows into the Zielawa. At present, the two rivers join approximately 3 km to the north-east of Ortel Książęcy, near the village of Perkowice. The broad interfluvium, forming the floor of the above-mentioned palaeo-lake, is locally dissected by numerous channels draining a meadow area of approximately 3.0 km². In its central part lies the stronghold known locally as Łysa Góra.⁷

Research conducted within the Polish Archaeological Record (*Archeologiczne Zdjęcie Polski*, hereafter as 'AZP') has shown that early-medieval settlement patterns favoured flood-free terraces and elevations amid the wetlands forming the floor of the former lake basin.

The stronghold and its associated settlement are situated in such a location, on the largest of these elevations, positioned in the central part of the basin and separating the regulated courses of the Zielawa and Żarnica rivers (cf. Figs. 1: 12, 15). On the basis of its location, form, and geological structure (fluvial and fluvio-periglacial sands),⁸ and taking into account the preserved traces of shifts in the courses of the aforementioned watercourses, it may be assumed that this feature represents a sandbank (shoal?) that formed among low peat bogs, or alternatively an upland outlier – possibly an eroded fragment of the upland whose edge is occupied by the present-day village of Dokudów.

In general terms, the form of this elevation may be described as roughly oval, with a longer axis running SW–NE for approximately 930 m and a perpendicular axis measuring a maximum of about 450 m.⁹ The irregular edge of this elevation was undoubtedly shaped by a riverbed that migrated repeatedly, leaving behind abandoned oxbows. This is evidenced by distinct relics of meanders visible on both the south-eastern and north-western sides of the elevation described here. In other areas (particularly in the south-western and north-eastern parts), pronounced erosion is visible, indicating periodic inundation and ongoing water erosion. The differences in absolute elevation between the basin floor (altitudes of 138.1–138.8 m a.s.l.) and the surface of the 'island' in these places amount to only about 0.5 m. By contrast, its central part lies beyond the reach of potential floods, as it is situated at least 2.6 m above the level of the wet meadows (altitudes ranging from 140.7 to 141.5 m a.s.l.).

It was precisely on this *plateau* where a settlement was established in the early Middle Ages, occupied between the 11th and 13th centuries.¹⁰ The shape and orientation of the *plateau*, in proportionally reduced form, replicate those identified for the entire sandbank. Along the SW–NE axis, this oval-rectangular elevation measures approximately 310 m in length and about 160 m in width. The place is locally known as 'Manastyr' ('monastery'), which has a direct historical justification¹¹ and is firmly embedded in the local tradition.¹²

⁵ Albrycht 2002, 21.

⁶ Description based on data from Hydroportal, Wody Polskie (wody.isok.gov.pl, accessed: September 2024).

⁷ Interviews with local residents – March 2024. The local name is not old; in the 19th century, as indicated by archival maps, it referred to an entirely different location (cf. Fig. 10).

⁸ SMG 605.

⁹ Measurements of area and absolute elevations were carried out using tools available on the Geoportal website.

¹⁰ Żółkowski 1985a.

¹¹ Information about the monastery appears in monographic studies of the locality and the district (Górny 1930, 84;

Demidowicz 2010, 7–8). It is said to have been founded in 1580 and to have functioned until 1651 (Mironowicz 1993). It was located on the lands of the Ortel estate, "between waters near the mountain". This information, although very laconic, corresponds well with the location of the stronghold described here.

¹² Echoes of this early-modern investment have undoubtedly been preserved in collective memory. Analogous microtoponyms are known from the south-eastern borderland of Poland (Geoportal). These include four names: Manastyr and Monastyr. The first two refer to forest localities, one between Poturzyn in Tomaszów district and Witków in Hrubieszów district, and the other to a part of the forest between the villages of Krywe and

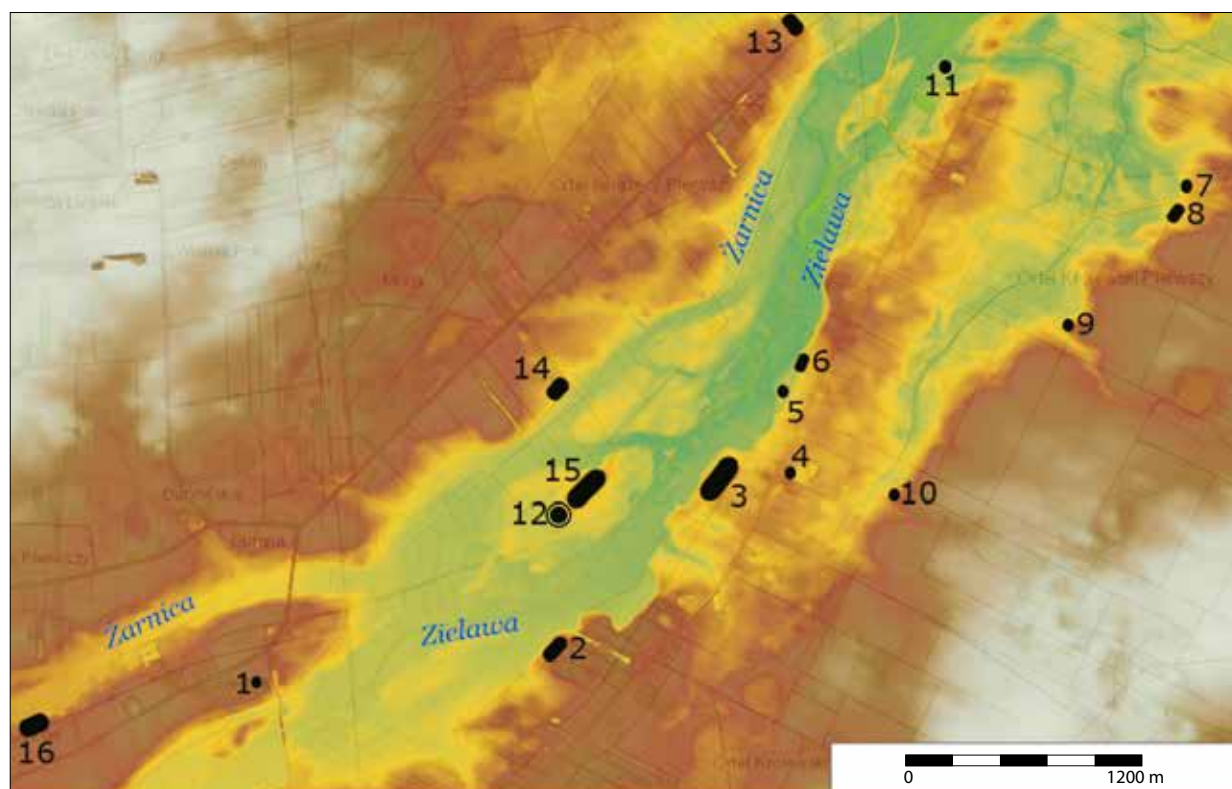


Fig. 1. Early-medieval settlement microregion Dokudów–Ortel Królewski–Ortel Książęcy according to the data of the Polish Archaeological Record (AZP). Settlement traces: 1, 4–5, 7, 9, 11; open settlements: 2, 3, 6, 8, 13–16, including the stronghold: 12. Sources: data – www.zabytek.pl (accessed: February 2024); map – Geoportal, www.geoportal.gov.pl (accessed: February 2024).

Previous field surveys showed that the stronghold was situated on the south-western side of the aforementioned ‘island’, occupying a separate, adjacent elevation. Until recently, this assessment shaped the corpus of archaeological data and its circulation in scholarly discourse,¹³ as well as the extent of site conservation.¹⁴ As a result, the site designated as no. 1 was a small stronghold described as a motte, constructed on a circular plan with a diameter of approximately 45 m and a present-day height of about 4.5 m, with a total area of around 0.2 ha.¹⁵ In the post-war period, it entered scholarly circulation as the “stronghold at Dokudów”, through the work by Jan Gurba.¹⁶ Nine years later, Zygmunt Ślusarski of the District Museum in Lublin carried out trial excavations which, apart from loose ceramic material, yielded no significant results. The site was also surveyed sever-

al times in the 1970s and in the early 1990s, resulting in the confirmation of the Dokudów motte’s position on the archaeological map of the region¹⁷ and its inclusion in the records of the AZP project.¹⁸

The situation at the time is well illustrated by two aerial photographs taken at the beginning and at the end of the 1970s (Fig. 2). On this basis, it can be stated that the surroundings of the stronghold were then (and probably earlier) intensively used for agriculture. Unlike today, when the area is used as pasture and hay meadows, representing a step towards reclamation, at that time it consisted of arable fields that were intensively ploughed and harrowed. The older photograph shows that at least the south-western half of the stronghold itself was also under cultivation, which would be difficult to imagine without the photographic evidence, given the steep slope

Sękowiec in the San basin in Bieszczady district. The third and fourth are directly associated with Basilian monasteries that functioned there in the early-modern period: in Terka, Lesko district, and Werchrata, Lubaczów district (in both cases, relics of the monastic buildings have been preserved).

¹³ Prusicka (ed.) 2016.

¹⁴ Żółkowski 1985b.

¹⁵ Żółkowski 1988, 38–39; Bienia 1998, 10–11; Skrzyńska 2021, 215.

¹⁶ Gurba 1952, 112.

¹⁷ Nosek 1957, 349; Musianowicz 1960, 210, no. 103; Antoniewicz, Wartołowska (eds) 1964, 32, 63; Gurba 1976, 16; Miśkiewicz 1981, 172, no. 95; Faszcz 1984, 20.

¹⁸ Żółkowski 1991.



Fig. 2. Stronghold in Ortel Książęcy on archival photographs: a – 1970; b – 1979. Source: National Geodetic and Cartographic Resource.

of the rampart embankment (Fig. 2a). The later photograph demonstrates that these practices were abandoned in the following years, as indicated by the appearance of shrubs on the slopes of the fortifications (Fig. 2b). Both photographs also show the central part of the upper surface of the structure as saddle-shaped and lowered in relation to the edges. This suggests that the mound is not a homogeneous earthen construction but a very small ringfort, with the interior almost completely filled with redeposited soil. Both images also reveal a trace of a rectangular cut in the central part of the courtyard, probably marking the location of the 1960 test trench, as well as traces of both external fortification lines, which are not visible from the ground level.

Such was the state of research until 1998.¹⁹ An analysis of aerial photographs of the site, taken at that time by Jan Maraśkiewicz for archaeological purposes, confirmed that the fortification was originally much larger and consisted of several defensive lines in the form of alternating ditches and ramparts.²⁰ These observations were subsequently verified through an analysis of LiDAR data by Mieczysław Bienia²¹ and further confirmed by my own analysis of satellite imagery and LiDAR maps available on the Geoportal.²² In the light of the latter, it is clear

that the ‘registered’ stronghold (Fig. 3:1) constitutes only a small part of an extensive and probably older fortification complex (Fig. 3:2), possibly consisting of as many as two lines of concentric ramparts, while the entire structure is encircled on the side of the wet meadows by the trace of an additional peripheral ditch which was apparently not closed on the side of the settlement (Fig. 3:2g).

In the light of these data, the information concerning the stronghold’s location can be revised. Latest observations indicate that the structures in question were probably built on the original, promontory-like edge of the Manastyr elevation rather than on a separate sandbank, and that their apparent ‘separation’ from the settlement was achieved precisely through earthworks. The plan of the central part of the stronghold is the most clearly legible, where a heavily-eroded, roughly circular rampart approximately 15 m wide can be distinguished, surrounded on the outside by a moat and separated on the inside by a ditch (Fig. 3:2b–2d). As a result, a fragment of the courtyard is also clearly visible, in the north-western part occupied by the fortifications of the small ‘motte’ stronghold mentioned above. With a diameter of approximately 85 m, the area of this com-

¹⁹ Bienia 1998, 10–12.

²⁰ Miśkiewicz 2003, 108, photo 11.

²¹ Bienia 2019, photo 1b, figs. 1–2.

²² Skrzyńska 2021, 108–109.

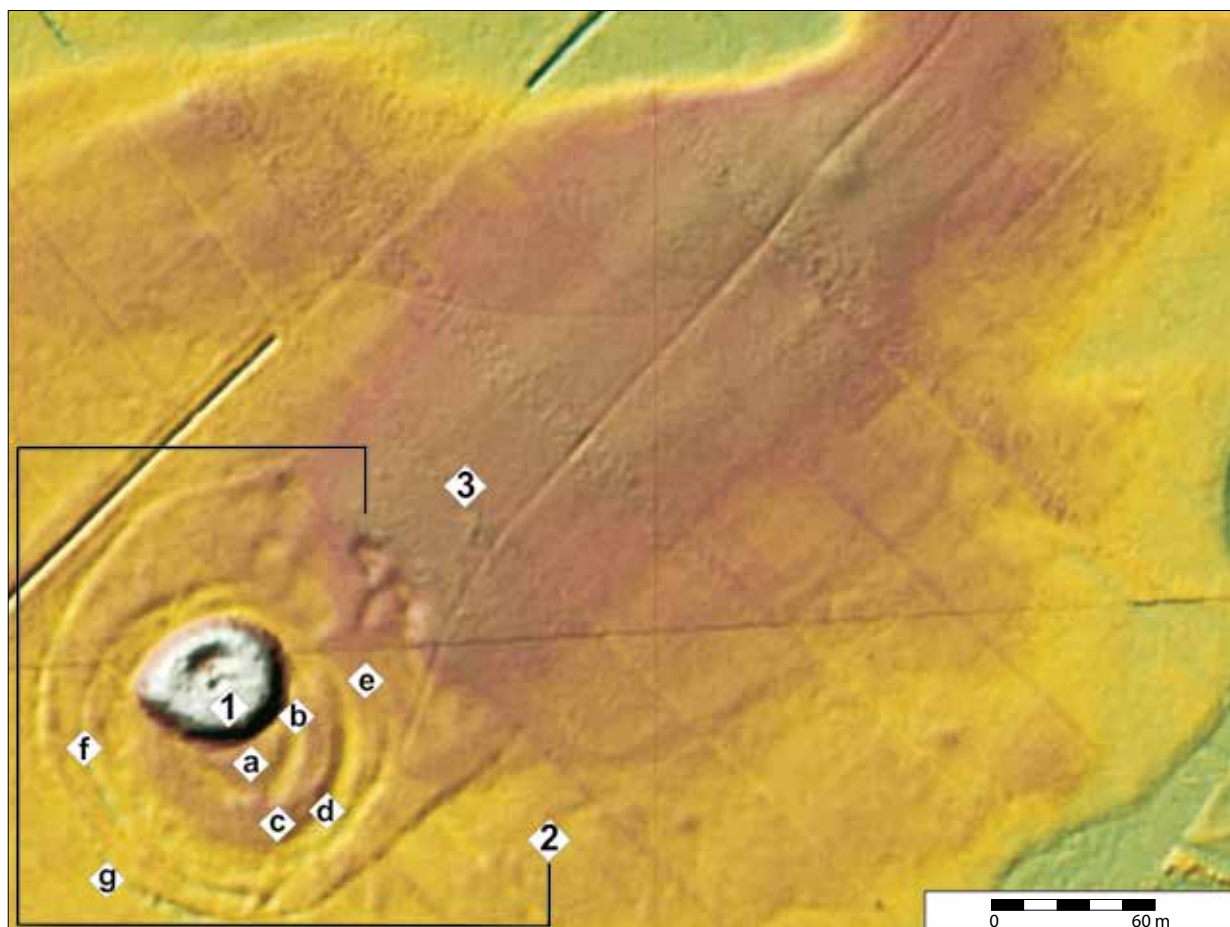


Fig. 3. Preliminary identification of the fortification system forming the early-medieval stronghold on the LiDAR visualisation: 1 – ‘motte’ stronghold; 2 – older (?) ringfort (a – courtyard, b – rampart-adjacent depression, c – ring rampart, d – moat, e – spur (?), f – outer ditch, g – circumferential ditch); 3 – Manastyr settlement. Based on the plan available at: www.geoportal.gov.pl (accessed: February 2024).

plex can be estimated at around 0.6 ha. The presence of a second (outer) line of fortification, defined by a double ring of ditches in the south-western part, probably connecting with one another (Fig. 3:2d, 2f), is less obvious. It is, however, indicated by a C-shaped trace visible on the northern, north-eastern, eastern, and south-eastern sides of the stronghold (Fig. 3:2e). Given the absence of traces on the south-western side, it cannot be ruled out that this additional outer earthwork took the form of a segmental spur, constituting the forefield of the complex from the side of the settlement. This may have also been where the stronghold gate was located. Taken together, all these fortification lines form a circle approximately 114 m in diameter and enclosing an area of approximately 1.1 ha. Its shape is echoed by the aforementioned outer ditch, possibly serving as a drain, which separates the stronghold from the wetlands (Fig. 3:2g).

With this feature included, the diameter of the entire Dokudów fortification system reaches 155 m, giving an area of approximately 2.0 ha.

The issue of the dating of the fortifications remains open. Trial excavations conducted in 1960 on the ‘motte’ stronghold yielded no decisive results; until the end of the 20th century, it was hypothetically dated to the 11th–12th centuries on the basis of pottery found within the settlement area and within the range of the fortifications.²³ At present, following the identification of the outer ring of ramparts, the chronology of the entire complex is being relativised with regard to its presumed two-phase development: the older stronghold, no longer visible today, is hypothetically dated to the 11th or 10th–11th centuries, while the younger ‘motte’ is dated to the 12th century.²⁴

²³ Bienia 1998, 10.

²⁴ Bienia 2019, 287; Skrzyńska 2021, 214–215.

In general terms, in its layout, location, and chronology, the Dokudów stronghold resembles the fortification at Dzieńcioły, Łosice district, situated 45 km to the north-west, in the middle course of the Toczna River on the Siedlce Upland.²⁵ The defensive complex there is characterised by a similar location: on the edge of a prominent promontory situated at the confluence of two meandering watercourses, amid difficult-to-traverse wetlands. The stronghold there, like the Dokudów site described here, consists of an extensive system of multiple ring-shaped fortifications. There, too, the youngest element of the structure is a small ringfort built into the inner face of a selected section of the undoubtedly older ring rampart.²⁶ Both of these strongholds – through their multiple lines of fortifications and the presence of a small inner ringfort as the clearly youngest element – correspond to the stronghold at Busówno, Wierzbica commune, located approximately 80 km to the south of Dokudów, already within Western Polesie.²⁷ It is the only fortification of this type that has been extensively excavated to date.²⁸ For this reason, it constitutes an important point of reference for formulating preliminary conclusions regarding the chronology of both aforementioned southern Podlachian sites. The fortifications there, barely visible in the terrain and consisting of ring timber-and-earth ramparts with accompanying ditches, were constructed no later than the 10th century and remained in use in the following century.²⁹ In the second phase, dated to the 12th–13th centuries, a mound was erected in the central part of the fortifications, and a contemporary settlement grew around it. There, too, a skeletal cemetery may have functioned from as early as the 13th century.³⁰

The characteristic spatial layout of these strongholds corresponds directly to the scheme referred to in the literature as the Chodlik-Huszelw type.³¹ Its defining feature is the presence of at least two parallel rings of fortifications, composed of ramparts and accompanying moats, arranged concentrically around the courtyard, whose area is relatively small in relation to the extended fortification system. These strongholds are also distinguished by the method used to construct the defences, which were based on a low earthen embankment supported with timber and/or crowned with palisades. This model is identified as one of the hallmarks of the post-Prague horizon of Slavic culture in Western Polesie and the Lublin region. The chronology of the oldest strongholds constructed according to this scheme there reaches back to

the 8th century.³² The stronghold at Dokudów, by contrast, lies within a zone where this construction technique began spreading in the second half of the 9th century.³³

The stronghold and its surroundings on historical maps

The earliest detailed cartographic studies of this area provide interesting information about the stronghold. Their analysis allows us to answer the question of when, and potentially under what circumstances, the fortification complex ceased to be identifiable through surface survey. As a consequence, the site was only partially recorded in the 1950s, and the complete fortification complex was not marked at all on the detailed maps produced in the 1960s (Figs. 4:a–b). On both the 1:25,000 scale map and the second, more detailed one, the anthropogenic form of the ‘motte’ of Łysa Góra is clearly indicated, while the remaining fortification lines appear as C-shaped or elongated depressions and elevations, rendered in the same manner as natural geological features. For the purposes of the following analysis, the key observations derived from these maps are as follows:

1. The canalised courses of both rivers flowing around the stronghold and the Manastyr locality – the Żarnica to the north-west and the Zielawa to the south-east – are clearly legible and correspond to present-day conditions (*cf.* Hydroportal).
2. The traces of fortifications, marked in the same way as geological formations, lie along the extension of the ‘axis’ of the Manastyr elevation, linking them with another small hill situated between the stronghold and Dokudów.
3. The ‘motte’ stronghold, forming part of the fortification system, lies above this line, close to the south-western ‘corner’ of the adjacent ‘monastic’ elevation.

The early-medieval stronghold had presumably ‘always’ constituted an important element of the local cultural landscape. This is documented in the location charter of 1503, issued for the town of Lewkowo, which was established on the lands of Dokudów by the owner of the local estate, Lew Bohowityn Bohowitynowicz.³⁴ In addition to standard regulations, it included permission to build a castle, which was to be erected “on the old *horodyscze* [stronghold] on the island”,³⁵ thus most likely within the early-medieval fortifications, in the vicinity of the place where an Orthodox monastery was

²⁵ Skrzyńska 2019.

²⁶ See Skrzyńska 2019, fig. 3.

²⁷ Skrzyńska 2021 109, fig. 6.3; *cf.* Dzieńkowski 2019, fig. 1.

²⁸ Buko, Dzieńkowski 2008.

²⁹ Dzieńkowski 2019, 95–96; see also Buko et al. 2008, 43.

³⁰ Buko et al. 2008, 32–35.

³¹ Skrzyńska 2021, 170–172.

³² Miechowicz 2018.

³³ Skrzyńska 2021, fig. 8.9.

³⁴ Flisiński 2008, 7–8.

³⁵ Demidowicz 2010, 5.

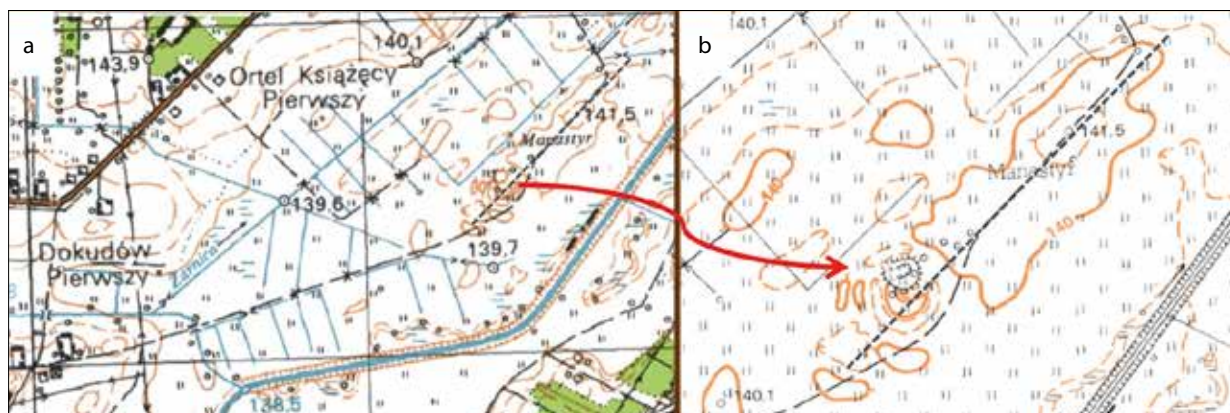


Fig. 4. Łysa Góra stronghold and the open settlement in the Manastyr elevation on maps from 1965 with an auxiliary axis of both sites marked: a – 1:25,000 scale; b – 1:10,000 scale. Based on the maps available at: www.geoportal.gov.pl (accessed: February 2024).

founded 77 years later (as reflected in the modern toponym ‘Manastyr’). It is therefore clear that the stronghold defences constituted an important marker in the cultivation of cultural memory, as they served to legitimise secular authority and to reinforce confessional identity.

These facts provide a proper background for presenting the earliest cartographic representations on which the stronghold is marked together with the adjacent sandbank/outlier. These are two cadastral plans of the Ortel estate and the town of Dokudów, included in the atlas entitled *Mappy Hrabstwa Bialskiego z folwarkami y wsiami do niego należącemi Dobr Jasnie Oświeconego Xięcia JMC Hieronima Radziwiłła, Podkomorzego Wielkiego Księstwa Litewskiego z wymiaru geometrycznego sporządzone 1781 roku*, known as the ‘Radziwiłł Atlas’.³⁶ The author of the maps and plans was Leonard Targoński, a royal surveyor. The areas of Dokudów and Ortel Książęcy were depicted on plans prepared in 1779. The first of these (Fig. 5), described as *Mappa Folwarku Ortela y Wsi Pierkowicz do Tegoż Folwarku Należącej*, shows the north-eastern part of the local estate, where the stronghold together with the settlement on the Manastyr elevation are features located immediately adjacent to the southern boundary of the map’s coverage.³⁷ The second (Fig. 6), entitled *Mappa generalna Folwarkow Ortelskiego y Dubowskie z Miastem Dokudowem y Wsiami do Nich Należącemi*, covers the en-

tirety of the local holdings. The indicated early-medieval settlement complex marks their eastern boundary there, lying along the border with the royal estates, delineated by the Zielawa River.

The scale of both plans is expressed by means of a transverse scale, given in geometric cords, with an accuracy of one cord marked on the horizontal axis and 0.1 of a cord on the vertical axis (cf. Fig. 5c).³⁸ This scale refers to the Lithuanian metric system, as confirmed by the linear scale included on the main map of the Radziwiłł Atlas, entitled *Mappa generalna hrabstwa bialskiego dóbr Jasnie Oświeconego Xięcia Jmci Hieronima Radziwiłła, Podkomorzego Wielkiego Księstwa Litewskiego*. Its unit is one Lithuanian mile, divided into 160 cords, corresponding to the division used in the 18th century for the “large Lithuanian mile”.³⁹ This measure corresponds to the 1:93,000 scale used today.⁴⁰

According to calculations by Eugeniusz Stamm,⁴¹ who carried out a metrological analysis of the units used by Karol de Perthées – who produced maps at roughly the same time as L. Targoński prepared his plans – one large Lithuanian mile could alternatively measure between 7,672, through 7,674, 7,830, and 7,860, up to 8,238 m. It follows that the length of a single cord ranged from 47.95 m in the first variant to approximately 51.49 m in the last.

³⁶ The manuscript of the work, comprising 50 hand-drawn maps of Biała Podlaska and its surroundings, is held in the special collections of the Zieliński Library of the Płock Scientific Society in Płock (shelf mark A. 223); see the Radziwiłł Atlas.

³⁷ The plan is oriented differently from modern standards: the compass rose is rotated by 90° in relation to the description, that is, the arrow pointing upwards indicates east, while the one

pointing downwards indicates west. The map shown in Fig. 6 is oriented differently still.

³⁸ How to read measurements from a transverse scale, see Wikipedia, entry: “transverse scale”.

³⁹ Stamm 1938, 35.

⁴⁰ Wagner 2020.

⁴¹ Stamm 1938, 35.

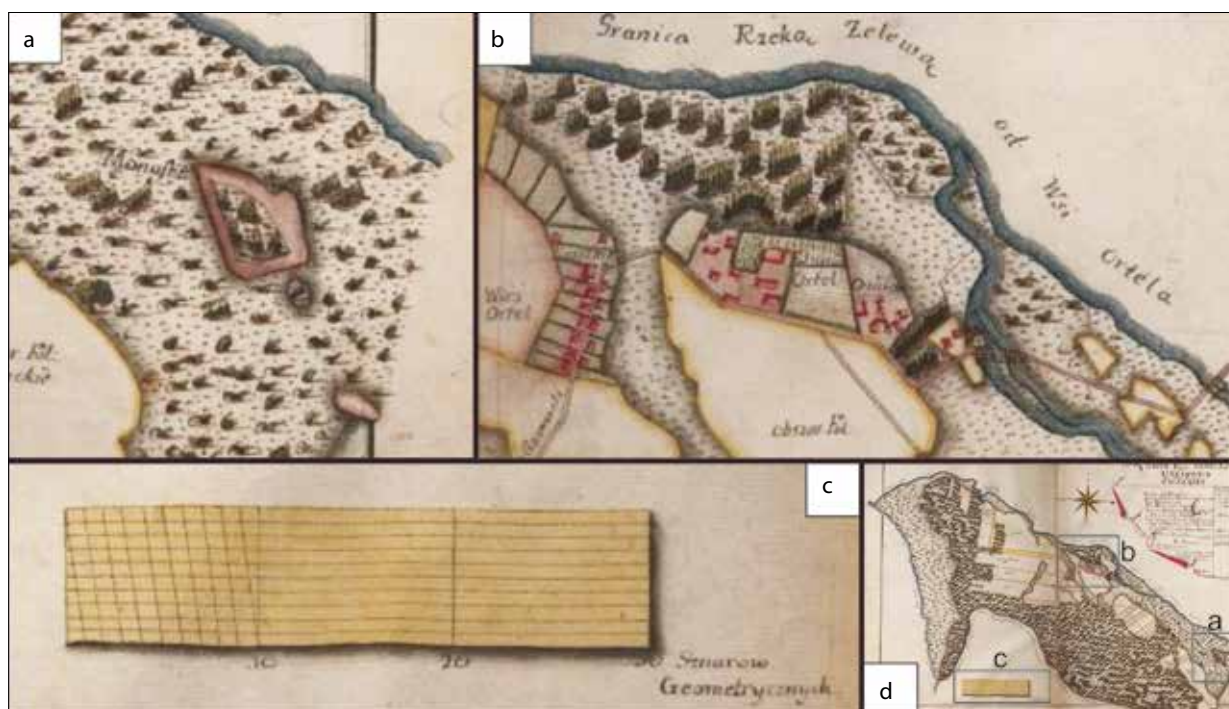


Fig. 5. Plan of the Ortel Książęcy farm drawn up by L. Targoński in 1779: a – stronghold and Manastyr backwater; b – localisation of Ortel Książęcy village; c – transversal scale; d –miniature of the cart. Source: Radziwiłł Atlas, <https://plock.ap.gov.pl/index.php/2021/06/08/atlas-radziwillowski-wystawa-wirtualna/> (accessed: February 2024).

The two plans differ in their degree of accuracy: the one depicting Ortel and its immediate surroundings (cf. Fig. 5) is more detailed than the composite plan prepared for both estates (cf. Fig. 6). In both, the stronghold is clearly depicted. In the more detailed plan, it has a slightly oval form, with its longer axis oriented SW–NE and measuring, when calculated using the transversal scale, no less than 1.7 cords. The width of the feature along the perpendicular axis is approximately 1.4 cords. With reference to the calculations presented above, it may be inferred that at the time the plan was drawn up the actual dimensions of the fortifications may have ranged from approximately 82×67 m (assuming the lowest value for one cord) to approximately 88×72 m (assuming the highest value). These dimensions are close to those obtained on the basis of modern measurements derived from the LiDAR visualisation (diameter of approximately 80 m). The discrepancy in the calculations, also taking into account the lack of a standardised measure for the length of the early-modern Lithuanian mile, is very small. This indicates clearly that in the second half of the 18th century the old *horodyszcze* at Dokudów still comprised a complex consisting of at least the main rampart (cf. Fig. 3:2c) and the so-called ‘motte’ stronghold enclosed within it (cf. Fig. 3:1). In light of these results, the hypothesis that L. Targoński marked only Łysa Góra

– that is, the so-called ‘motte’ (diameter approx. 45 m), which is the only element of the described fortification complex clearly visible in today’s landscape – can be ruled out.

The validity of these comparative calculations is further confirmed by metric data relating to the Manastyr elevation. At present, the dimensions of its *plateau* (310×160 m) are close to those read from Targoński’s plan for the central part of the ‘island’, depicted as an irregular polygon overgrown with scattered trees (cf. Fig. 5:a). Its longest diagonal, calculated using the transversal scale, measures 6.5 cords, which – depending on the adopted length of a single cord – corresponds to approximately 312 to 335 m. The width of the *plateau* on the archival plan is approximately 3.6 cords, which amounts to approximately 173–185 m.

As is the case today, at the end of the 18th century the area between the Żarnica and the Zielawa was covered by meadows. This is visible in the first of Targoński’s plans (cf. Fig. 5:a), where the wet-meadow landscape, much like today, was then diversified by individual clumps of trees, also schematically depicted on the composite map of both estates (cf. Fig. 6). Confirmation of this is also found in written sources, which, among the hay meadows, mention one bearing its own name, ‘Ostrów Monastyrski’.⁴² Similarities to the present-day

⁴² Demidowicz 2010, 11.

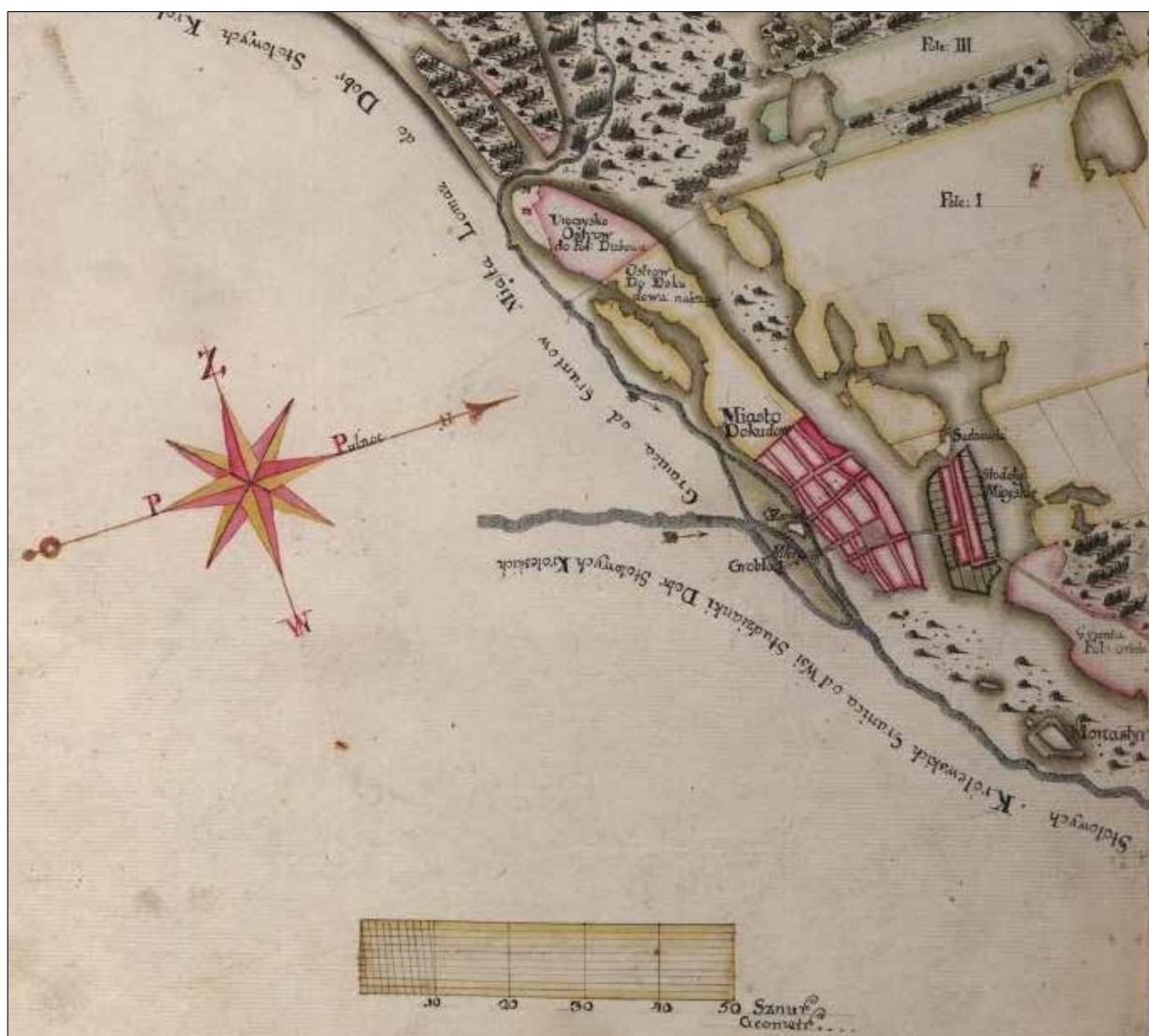


Fig. 6. Part of the plan of farms Ortel Książęcy and Dubowo drawn up by L. Targoński in 1779. Source: Radziwiłł Atlas, <https://plock.ap.gov.pl/index.php/2021/06/08/atlas-radziwillowski-wystawa-wirtualna/> (accessed: February 2024).

situation can also be observed in the depiction of the local section of the Zielawa River, which prior to 1779 flowed from the south and, at the height of Dokudów, turned towards the north-east, just as today. At that time, it had a meandering yet approximately rectilinear riverbed along the south-eastern edge of its own basin, which is particularly wide here – the basin of a Pleistocene lake (cf. Fig. 6). To the south-west of Ortel Książęcy, it divided into three branches, which rejoined into a single riverbed at the level of the manorial buildings (cf. Fig. 5:b). Despite later drainage works, their traces remain legible to this day.

A fundamental difference in the local hydrographic pattern is noted, however, in the case of the Żarnica River, the left-bank tributary of the Zielawa, which today flows in a drainage ditch excavated along the north-western slope of the basin, diverted from the natural geological trough separating the Dokudów 'island' from the north-western edge of the upland (cf. Figs. 1 and 4:a). The mouth of this tributary is currently located near Perkowice, Biała Podlaska commune, approximately 6.5 km to the north-east of Dokudów. As indicated by one of the plans by L. Targoński discussed earlier (cf. Fig. 6), the Żarnica – referred to in the 16th century as "Królewobród"⁴³ – origi-

⁴³ "[O]n the river called Królewobród" (1570 – LWP after ESH). The name 'Żarnica' appears on the map of 1911 and is the

earliest attestation known to me (Fig. 10; cf. 'Żarnica' in ESH).



Fig. 7. Part of the Zielawa River basin between Dokudów and Ortel Książęcy on the map of A.M. Heldensfeld from the beginning of the 19th century (according to Heldensfeld 1801–1804, ark. IXa 242). The circle marks the approximate location of the stronghold and the Manastyr settlement. Based on the map available at: <https://maps.arcanum.com/en/map/europe-18century-firstsurvey> (accessed: April 2024).

nally flowed into the Zielawa at the level of the town of Dokudów, but not along the basin mentioned above; instead, it ran along the south-eastern edge of the Dokudów 'island', at the height of the Ostrów locality belonging to the Dubów estate, before turning sharply to the south. At that time, the two rivers joined roughly at the level of the causeway along which the road from Łomazy led to Dokudów (cf. Fig. 6).

In the early-modern period – and probably also in the Middle Ages – this area was highly waterlogged. This is evidenced by the depiction by Anton M. von Heldensfeld from the early 19th century (Fig. 7), for which the field data were likely collected towards the end of the 18th century.⁴⁴ On this map, attention is drawn to the sinuous line of the Zielawa – strongly meandering and, at the level of Dokudów, flowing in a completely different manner than a quarter of a century earlier (cf. Figs. 5 and 6). Clearly, in the meantime it abandoned its old riverbed, turning sharply northwards and flowing around the stronghold and the Manastyr backwater from the north-west, rather than – as previously – from the south-east. Beyond the stronghold, at the level

of Ortel Królewski Pierwszy, it re-entered its old riverbed, at the same time creating a series of oxbow lakes that constitute traces of an evidently recent secondary migration. Around the early-medieval settlement complex, a marsh was depicted, sparsely overgrown with trees. The Żarnica is absent from this map, although its basin was once again clearly documented between the elongated 'island', with the town of Dokudów located on its north-eastern edge (today: Siedlisko), and the economic hinterland situated to its north. At that time, municipal barns and other farm buildings were located there, the memory of which has been preserved in the onomastic trace of the name of the present-day village of Gumna, Biała Podlaska district.

The causes of this radical change in the hydrographic pattern of the area should most likely be sought in natural factors. The shape of the river's new bed, strongly meandering along the floor of the former lake basin, does not indicate that it was anthropogenic. It may be assumed that specific natural factors came into play at that time – geological-lithological, hydrological, climatic, or biotic – affecting the formation of riverbeds.⁴⁵ This

⁴⁴ Sawicki 1928, 22–38.

⁴⁵ Andrzejewski et al. 2018, 19–20.



Fig. 8. Spring flood of the Krzna River in the vicinity of Biała Podlaska in the year 1947. Source: Bialska Digital Library, <https://bbcmhp.org.pl> (accessed: April 2024).

case presumably involved a combination of several such factors,⁴⁶ the most likely outcome of which was a flood.⁴⁷ A definitive answer in this regard, however, could only be provided by specialist studies of the basin-floor sediments.⁴⁸ As a result of flooding, the river may have abandoned its previous channel and cut a new one, which is characteristic of lowland watercourses during a sudden rise in the level of their water supply. This phenomenon was typical, for example, of the catchment of the upper and middle Vistula in the 18th and the first half of the 19th centuries,⁴⁹ as well as of the Bug River, which repeatedly changed its course as a result of seasonal floods.⁵⁰ Severe floods during spring thaws, as documented by archival photographs (Fig. 8), also occurred in the basin of the nearby Krzna River, one of whose main tributaries is the Zielawa discussed here. The Zielawa flows into the Krzna only 10 km to the north-east of the stronghold, near Woskrzenice Duże, located 10 km east of Biała

Podlaska. It cannot be ruled out that, during a flood disaster, the Dokudów post-lake basin – constituting a natural ‘expansion’ of the Krzna basin – may also have filled with water, resulting in a situation analogous to that shown in the photograph.

By comparing both cartographic sources⁵¹ – namely, the plans by L. Targoński drawn up in 1779 and the map by A. M. von Heldensfeld published in 1801–1804 – we may infer that this significant change in microregional hydrological conditions must have occurred in the final two decades of the 18th century. Unfortunately, there are no direct references to regional natural disasters from this period in historical sources. The likelihood of their occurrence is, however, reinforced by the results of studies based on the analysis of records from other parts of the Polish lands of the time. These indicate that, on a national scale, the years 1790–1820 were characterised by extreme weather conditions (droughts/floods). Within

⁴⁶ Starkel 2001, 217–224; Sobik, Kasprzak 2016.

⁴⁷ The same cause is cited, for example, for the migration of the lower course of the Wisłok River, which occurred in the last quarter of the 19th century, see Superson 2024, 95.

⁴⁸ See, for example, Kobjek 2012.

⁴⁹ Starkel 2001, 195.

⁵⁰ See, for example, Szwejgier 1999; Kusznerczuk 2008; Ostrowski, Utratna 2018.

⁵¹ The method of cartographic comparison was modelled on reconstructions of riverbed changes carried out by geographers: the Kamionka River from the 18th century onwards, see Przepióra, Kalicki 2018, 26–27; the Pilica River from the 19th century, see Jędrzejczyk 2020, 35–37; and the lower Wisłok River in the 19th–20th centuries, see Superson 2024, 22–23, 94–98.

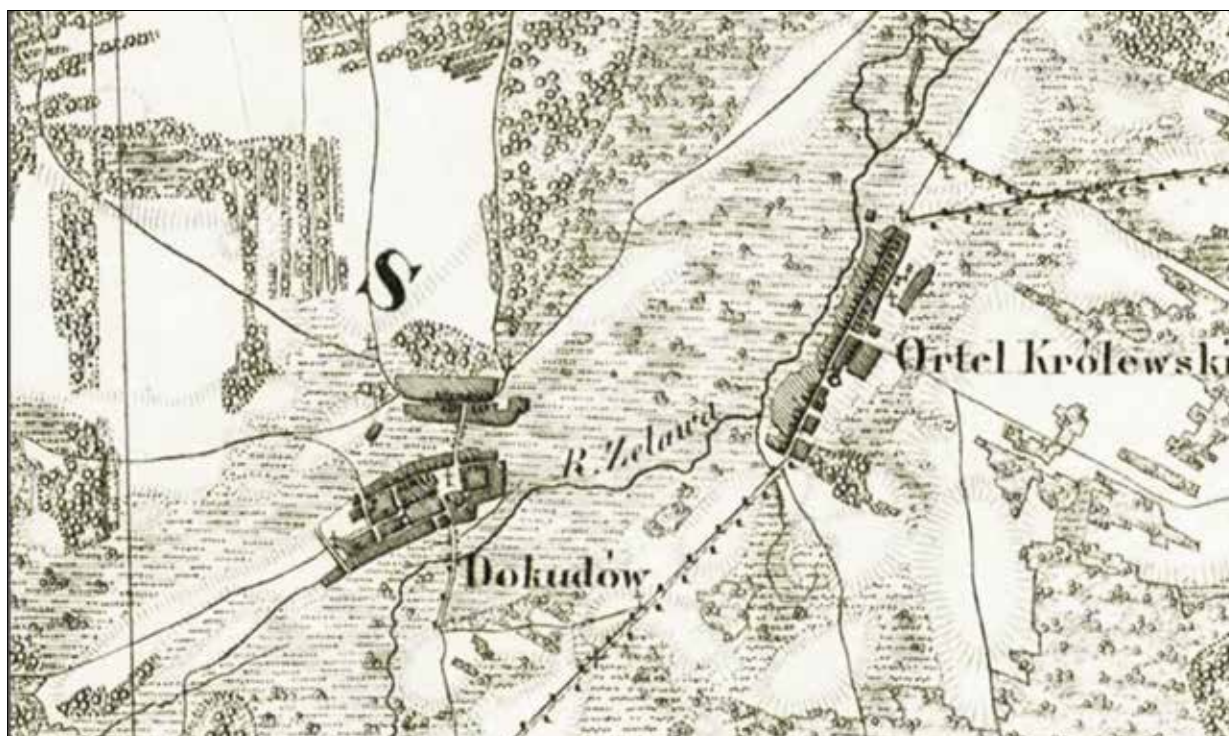


Fig. 9. Zielawa River basin in the vicinity of Dokudów and Ortel Królewski in the second quarter of the 19th century, according to the so-called *Mapa Kwatermistrzostwa* (1843). Based on the map available at: Mapster, <http://igrek.amzp.pl> (accessed: May 2025).

the nearly twenty-year period considered here, defined by the dates of the plans and the map, three summer seasons described as “extremely wet and very wet” were recorded.⁵² The same conclusion has been formulated on the basis of analyses of growth increments and dendrochronological dating of pines from the Kuyavian-Pomeranian region, which indicate that the years 1780–1800 were warm and wet. It has also been shown that this ‘optimum’ ended around 1810 with several seasons in which the winter-spring transitional periods were much colder than those reconstructed for earlier and later decades, while at the same time being characterised by multiple abrupt but short-lived drops in temperature.⁵³ This may have resulted in a multi-year, slower release of meltwater, the transport of which by the river no longer posed major problems in terms of retention. Consequently, the microregional hydrographic situation, probably from the first years of the 19th century onwards, began to stabilise, and the Zielawa started to migrate back towards its former riverbed, as may also be indicated by cut-off meanders (oxbow lakes) depicted in the north-eastern part of the basin – between the stronghold and Ortel Książęcy.

A further local change is shown on the depiction published in 1843 entitled *Topographical Map of the Kingdom of Poland* (so-called ‘Quartermaster Map’), for which field data were collected in the years 1822–1831.⁵⁴ On this basis, it can be stated that over the course of the following approximately 20–30 years, the hydrographic situation in the area of the stronghold returned to the state of the third quarter of the 18th century (Fig. 9).⁵⁵ The Zielawa River returned to its old riverbed, once again flowing along the south-eastern edge of the basin, just beyond the buildings of Ortel Królewski. The Żarnica can also be found in its former position, apparently once again, as several decades earlier, draining into the Zielawa to the south of Dokudów. Most likely due to the relatively small scale (1:126,000), neither the Manastyr locality nor the stronghold was marked on the Quartermaster Map.

A more detailed source is the *Spezialkarte der Österreichisch-Ungarischen Monarchie* (hereafter *Spezialkarte* 1911), compiled in 1873–1879 on the basis of field photograph in the 1:25,000 scale. The published map, issued at a scale of 1:75,000, makes it possible to discern the stippled outline of the Manastyr ‘island’

⁵² Przybylak et al. 2004, fig. 4.

⁵³ Przybylak et al. 2001, 84–86, figs. 1–2.

⁵⁴ Bartoszewicz 2000. On the high reliability of this map, see Nyta, Myga-Piątek 2012, 122.

⁵⁵ MpKwat: col. VI, sec. VIII – Międzyrzec.



Fig. 10. Vicinity of the Dokudów and Ortel Królewski villages in the 1870s, according to the *Spezialkarte 1911*, Łomazy: Zone C Col. XXVIII. The arrow marks the Manastyr hill. Based on the map available at: Repozytorium Cyfrowe Instytutów Naukowych, <https://rcin.org.pl>, accessed: May–June 2025).

(Fig. 10). It is, however, not sufficiently detailed to include the stronghold located on the south-western side of the sandbank. The map does, nevertheless, allow observation of the effects of efforts to eliminate the consequences of the river's earlier migration, which – even after its retreat (spontaneous or as a result of hydrotechnical works?) – must have left behind wetlands unsuitable for agricultural use. The network of visible drainage ditches testifies to attempts to dry them out and restore the former meadows to productive use. The changes brought about in the hydrographic pattern of the area were significant. The main channel, which currently serves as the Żarnica River's riverbed (cf. Figs. 1, 2:a), was excavated along the north-western edge of the flood-free terrace, probably deepening and straightening oxbows left there by the Zielawa during its migration. It was also dug towards the south-west, being led into the basin separating the Dokudów 'island' from the upland and, roughly at the level of Dubowo, connected with the old course of the Żarnica. Its lower reach, which had originally flowed around the same elevation from the south-east, was also regulated. Most likely, as at present, it joined the Zielawa at the level

of the causeway leading to Dokudów from the south – where the mouth of the natural tributary had previously been located. The map, however, does not depict this. To the north-east of the town, at the level of the stronghold and the associated settlement, several additional ditches connected to the main channel were dug. Clearly, therefore, the area was at that time so waterlogged that it required further drainage measures.

The changes brought about by the river's migration in the final decades of the 18th century must therefore have been sufficiently detrimental to the local economy to require intervention aimed at draining the meadows. In this context, important questions arise with regard to the stronghold's fortifications. There is no doubt that during the radical change in the course of the Zielawa the site was subjected to flooding (possibly over a prolonged period). This, in turn, probably led to water erosion of the ramparts, whose constructional core – just as has been established for the vast majority of regional strongholds, especially those with multi-ring fortifications – was most likely formed by earthen embankments, possibly (though not necessarily) supported with timber.⁵⁶ An analysis of the Russian *verstovka* map

⁵⁶ Skrzyńska 2021, 95–98, 127–131.

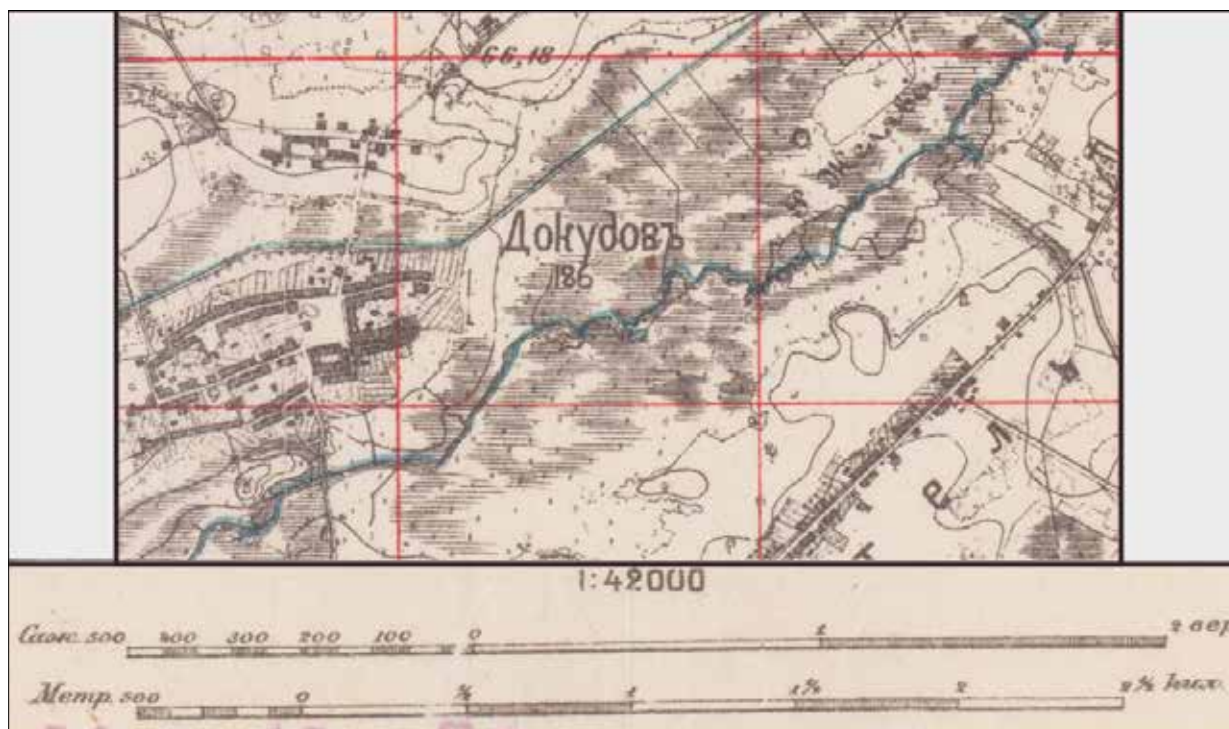


Fig. 11. Dokudów and the Manastyr elevation with the stronghold in the 1880s. Fragment of the map with a scale. Source: Karta 1929, ark. LXXXV, based on: Mapster, <http://igrek.amzp.pl> (accessed: May 2025).

at a scale of 1:42,000, based on field measurements carried out in the 1880s, confirms these assumptions (Fig. 11).⁵⁷ Between the Zielawa and the drainage channel now known as the Żarnica, the Manastyr elevation and the associated stronghold are marked. The latter has an almost circular shape, delineated by concentrically arranged short strokes. The diameter of the feature defined in this way is approximately 43 m, which corresponds to the present-day diameter of Łysa Góra, that is, the small 'motte' stronghold – 45 m (cf. Fig. 3:1). No traces of the extensive defensive system documented by modern LiDAR surveys were recorded.

In comparison with the plan drawn up by L. Targoński approximately one hundred years earlier, the neighbouring Manastyr elevation is also depicted differently (cf. Fig. 11). Apart from its north-eastern part, its slopes are not marked, perhaps having been heavily eroded by river migration. It appears that the Russian map shows only its *plateau*, with a form approximating an elongated polygon. Its dimensions, read from the map, are approximately 330 m along the SW–NE axis and about 170 m along the perpendicular axis, measured at its widest point. This result is close both to contemporary metric data – approximately 310 × 160

m (cf. Fig. 3:3) – and to the measurements recorded by L. Targoński in the 1770s: approximately 312–335 m × 173–185 m.

It therefore follows from the above calculations that the surface area of the Manastyr *plateau* did not change despite the migration of the Zielawa's riverbed. This is evidenced by the similarities in its shape and dimensions as shown on both archival representations, which also correspond to modern measurements. By contrast, the diameter of the stronghold changed radically: on L. Targoński's plan it was significantly larger than that depicted approximately one hundred years later. It thus appears that, as a result of water erosion, the ring rampart was destroyed, and only the 'motte' stronghold survived on the surface.

It is also worth noting that, together with the disappearance of the external stronghold, the term *horodyszcze* also vanished from local toponymy. What remained no longer evoked associations with a stronghold or its former cultural name in contemporary social consciousness, despite that name having previously been embedded in local tradition and attested in written sources. The 'motte' stronghold, however, continued to constitute an important landmark in the local landscape. It was

⁵⁷ See Karta 1929, sheet LXXXV – B Rossosh. For a brief overview of the work on the Russian *verstovka* maps, see Długosz

2022, 101–102; for a high assessment of the accuracy of this series of representations, see Nyta, Myga-Piątek 2012, 122–123.

given the ordinary topographical name 'Łysa Góra', referring to its physical appearance (literally: 'bald mountain'). Interestingly, this name was transferred from across the river, where it had previously been used to denote a natural dune (cf. Fig. 10).

Conclusion

By comparing cartographic sources relating to the area of Dokudów and Ortel Królewski from the last quarter of the 18th century to the early 20th century, a clear microregional change in hydrography has been identified, consisting in a segmental avulsion of the Zielawa's riverbed. With reference to the dating of the cadastral plan of the Ortel estate and subsequent maps (dates of field surveys and dates of sheet publication), the chronology of this event can be placed in the final two decades of the 18th century. Palaeoclimatic reconstructions for the Polish lands of that period indicate that this phase included at least several markedly wetter seasons, during which a drastic rise in surface water levels may have occurred. Locally, this could have resulted in floods or inundations leading to segmental changes in riverbeds, a phenomenon particularly frequently recorded in the case of meandering and anastomosing rivers. The Zielawa also represents this type. Especially favourable conditions for such processes existed in the vicinity of Dokudów and Ortel Książęcy, where the river flows through a broad basin that is a remnant of a Pleistocene lake. The absence of significant geological barriers meant that changes in the river's course occurred there frequently and repeatedly, as evidenced by characteristic

traces visible in LiDAR visualisations. Floods must have caused severe losses to agriculture and animal husbandry, which formed the economic basis of local communities. For this reason, the first drainage works were undertaken there in the early decades of the 19th century. Their primary outcomes were changes in the shape and direction of the Żarnica River's flow and the restoration of the Zielawa's original riverbed. As a result, the basin floor was drained, increasing the area of agricultural land (meadows and pastures).

A particularly interesting aspect of this reconstructed history concerns the early-medieval stronghold, whose multi-ring fortification system was almost completely destroyed. With a high degree of probability, this destruction was caused by the river migration identified through analysis of the maps discussed above. This is evidenced by differences in the dimensions of the fortifications shown on the cadastral plan of the Ortel estate drawn up in 1779 and those documented on the Russian *verstovka* map, for which field measurements were carried out in the final two decades of the 19th century. The earlier depiction most likely shows the entire stronghold, whose rings were still visible in the terrain at that time, whereas the later one records only the inner fort, which after the Second World War archaeologists registered as Site 1 at Dokudów. It is also significant that, together with the circumferential fortifications, the term *stare horodyszcze* ('old stronghold'), used in the early 16th century to refer to this site, most likely disappeared from local naming traditions. Today, the visible conical mound is known as Łysa Góra, a name that in the 19th century referred to an entirely different location in the vicinity of Dokudów.

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